

## New Crocinae (Neuroptera: Nemopteridae) from South America, with descriptions of larvae

by

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Two new genera, each comprising a single new species, *Moranida peruviansis* and *Amerocroce boliviana*, and their larvae are described from Peru and Bolivia respectively. The larva of *Veurise bruchi* Navás, from Argentina, is also described, and biological data are provided for the three species.

Three species of Crocinae have been described from South America: *Veurise bruchi* Navás and *Pastranaia riojana* Orfila from Argentina and *Veurise fritzi* Stange and Williner from Bolivia. Several authors, Navás (1927), Orfila (1954), Tjeder (1967), Hölzel (1975), Penny (1977) and Stange & Williner (1981), have dealt with these species but their accounts are all limited to the adult stage as larvae were, until recently, unknown.

In 1978, Prof. V. C. Moran and Dr H. G. Zimmermann collected larvae there for the first time, and upon rearing these larvae were found to represent three species, *V. bruchi* and two undescribed species, one from Peru and the other from Bolivia.

In the following account the new species, including their larvae, and that of *V. bruchi* are described and biological data are provided. Features of the male genitalia, wing venation and larvae of the two new species preclude them from either of the two existing South American genera, *Veurise* Navás and *Pastranaia* Orfila. Differences between the two also necessitate their separation into different genera, so two new genera, *Moranida* and *Amerocroce*, are established to accommodate them.

### *Moranida* gen. nov.

Type-species: *Moranida peruviansis* spec. nov.

Adults with long rostrum and antennae. Maxillae long; maxillary palps four-segmented; galea long, telescoped into stipes; labial palps three-segmented. Forewings slightly emarginated near apices; radial sector (Rs) arises some distance from wing base; two crossveins usually present between radius (R) and median (M) before Rs; Rs with first two branches curved upward towards R; posterior branch of cubitus (Cu2) and the first anal vein (1A) fused. Hindwings long, slender. Bullae absent from both pairs of wings. Legs long, slender; tarsi five-segmented. Male with tergite 9 divided; ectoprocts very long, curved; gonarcus and parameres simple, distal lobes of parameres free. Pleuritocavae present; gonosetae and spinellae absent. Female with tergite 9 divided, each half curving venteroposteriorly, separated from lateral gonapophyses by

membrane except near apices where they meet; sternites 7 and 8 fused, not divided ventrally, separate from lateral gonapophyses.

Larva with triangular head; mandibles curved; maxillae each reduced to a single blade recessed into ventral surfaces of mandibles to form sucking tubes; maxillary palps absent but cardo and stipes discernible; labium reduced to a single median plate bearing three-segmented labial palps on either side. Eyes each comprising seven stemmata. Prothorax long, divided into three regions; anterior region long, cylindrical, dilated apically; mid-region shorter, wider, divided into tergite and sternite, bearing the prothoracic legs; anterior and mid-regions strongly sclerotized; posterior region of prothorax short, weakly sclerotized, divided by deep transverse fold, incorporated with the rest of the body, bearing prothoracic spiracles. Legs long, slender; tarsi unsegmented. Abdomen ten-segmented; segments 1 to 6 all alike, becoming progressively smaller, with lateral spiracles; segment 7 short, broad, with lateral spiracles; segment 8 narrow, rounded; segments 9 and 10 reduced, telescoped into segment 8, together forming the spinneret.

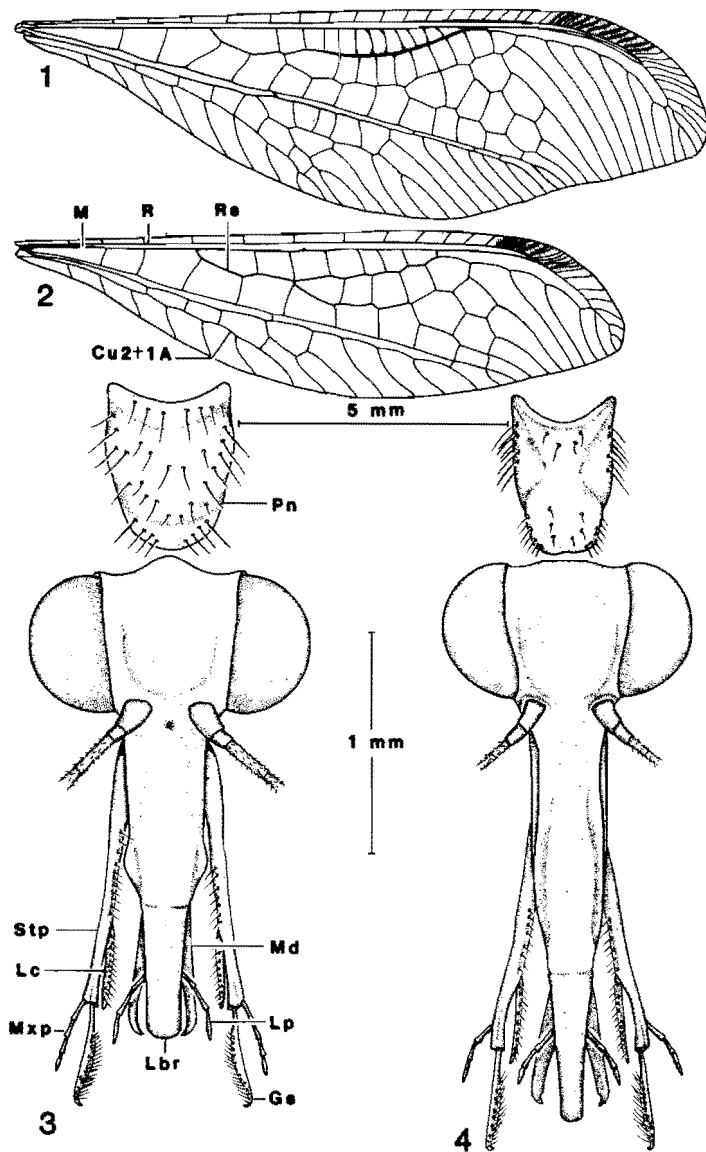
This new genus is named after Professor V. C. Moran, Rhodes University, who was the first to discover crocine larvae in South America, and in gratitude for his help and encouragement in my crocine studies.

*Moranida* is distinct from the two existing South American genera, *Veurise* and *Pastranaia*. It differs from *Veurise*, as redescribed by Stange & Williner (1981), in the shape of the wings, the structure of Rs, the longer abdomen and by features of the male genitalia, especially the length of the ectoprocts. *Moranida* and *Veurise* differ particularly in larval morphology; the larva of *V. bruchi*, described below (the type-species), has a very short prothorax compared to *M. peruviansis*. The larva and male of *V. fritzi* are unknown. The most important difference between *Moranida* and *Pastranaia* is the fusion of Cu2 and 1A in *Moranida*; in *Pastranaia* 1A is separate, a feature it shares only with *Josandrea* Navás (Orfila 1954). *Moranida* most resembles *Afghanocroce* Hölzel in the shape of Rs and the elongated male ectoprocts. However, the ectoprocts of *Moranida* are much longer than those of *Afghanocroce*, forming claspers with well developed spines on the inner surfaces. The hindwings of *Moranida* lack bullae (present in *Afghanocroce*), the shapes of the distal lobes of the parameres differ, *Afghanocroce* having superprocesses (Hölzel 1975), and *Moranida* has well developed pleuritocavae. It cannot be confused with any of the other crocine genera because of a combination of features such as the lack of bullae, form of the male genitalia, wing venation and larval morphology.

### ***Moranida peruviansis* spec. nov., Figs 1, 3, 5–14**

ADULTS. Sexes alike, characterized by the long rostrum and antennae, shape of forewings, structure of Rs and by the extremely long abdomen and projecting ectoprocts of the male. Size, mean measurements in mm for 18 specimens, ranges in brackets: length of body (excluding head) male 11.0 (10.0–13.0); female 8.0 (7.5–8.5); length of forewing 13.0 (12.0–14.0); length of hindwing 38.0 (33.0–42.0); length of antenna 4.60 (4.00–5.20); length of rostrum (from ventral margins of toruli) 1.39 (1.24–1.60); holotype male 13.0; 14.0; 42.0; 4.80; 1.48 respectively.

Head (fig. 3) with frons, vertex uniformly yellowish brown; clypeus pale proximally, brown distally, with tiny rusty brown spot medially between lower margins of toruli; gena and labrum uniformly light brown. Mouthparts pale yellowish brown; galea thickened apically with long backwardly directed hairs and hooked tip. Rostrum about 2.5 times as long as interorbital distance across vertex. Antennae very long, slen-



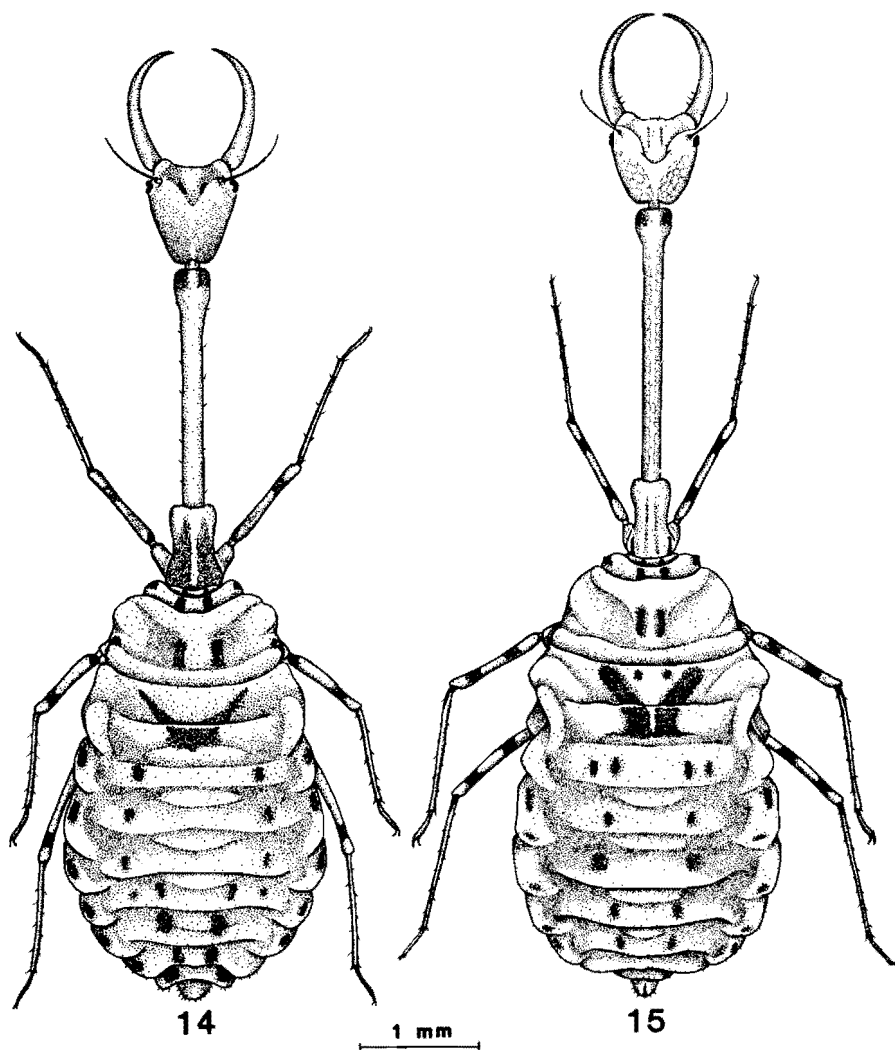
Figs 1–4. 1. Forewing of *Moranida peruviana* spec. nov. 2. Forewing of *Amerocroce boliviiana* spec. nov. 3. Head and pronotum of *Moranida peruviana* spec. nov. 4. Head and pronotum of *Amerocroce boliviiana* spec. nov.

Abbreviations: 1A – first anal vein, Cu2 – posterior branch of cubitus, Ga – galea, Lbr – labrum, Lc – lacinia, Lp – labial palp, M – median vein, Md – mandible, Mxp – maxillary palp, Pn – pronotum, R – radius, Rs – radial sector, Stp – stipe.



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Figs 14 & 15. 14. Larva of *Moranida peruviansis* spec. nov. 15. Larva of *Amerocroce boliviana* spec. nov.

der, thickened very slightly towards apices; scape and pedicel whitish, flagellum uniformly pale brown, densely clothed in short brown setae.

Pronotum (fig. 3) conical, wider than long, light brown laterally, paler in mid dorsal region, with curved black setae dorsally, long curved hyaline setae lateroventrally. Lateral cervical sclerite dark brown with black setae; sternites uniformly pale.

Pterothorax uniformly light brown, with slight infuscation on mesoscutum above wing bases; pleurites and sternites uniformly light brown. Legs pale yellowish brown, covered with short brown setae; proximal tarsomere very long, almost twice as long as combined length of distal four, paired tarsal claws reddish brown. Forewings (fig. 1) with slightly emarginated posterior margin, hyaline, with uniformly pale yellowish brown wing veins bearing pale curved setae and posterior marginal fringe; pterostigma comprising incassate costal veins, pale reddish brown proximally, whitish distally; two crossveins (rarely three) present between R and M before Rs; 11 or 12 (occasionally 9 to 14) densely arranged incassate radial crossveins between R and Rs; Rs branched, the first two branches curving upwards, the upper thickening progressively before coalescing with R for a short distance. Hindwings densely covered with light brown setae, becoming paler distally.

Abdomen very long in the male, shorter in female, with alternating broad white and brown bands, sparsely covered with short black setae. Male (figs 5–11) with each half of tergite 9 subquadrate, not overlapping sternite 9 which is long, upwardly curved, narrow, but broadened just before the acute apex; ectoprocts greatly elongated to form claspers (about 1.4 mm long), covered with long black setae and bearing nine stout curved spines on inner surfaces near apices. Gonarcus arcuate, with narrow flanges ventrally; arcessus long, slender, curved near apex; parameres slender, about 0.56 mm long, forming a right angle in lateral view, distal lobes broad, flattened, but with acute apices. Female (figs 12, 13) with venteroposterior margins of small ectoprocts projecting slightly, bearing long brown setae and indistinct callus cerci; lateral gonapophyses broad in lateral view with acute apices and bearing longish brown setae. Spermatheca narrow proximally, distended in mid-region then tapering to long acute tip and covered with minute seta-like outgrowths.

**LARVA** (fig. 14). Characterized by elongated tapering head, long pale prothorax and prominent marking on metatergites.

Head elongated, triangular, much longer than wide, tapering posteriorly, with minute papillae on dorsal surface; posterior and ventral surfaces of head dark brown, mid-dorsal area pale, with a dark V-shaped mark diverging from mid-region over tentorial pits to clypeus. Eyes black. Antennae each comprising a stout brown pedicel bearing a slender, light brown eight-segmented flagellum; proximal and distal flagellomeres long, intermediate six short. Mandibles longer than head, light brown, darkening towards curved apices, devoid of teeth and dolichasters; labial palps yellowish; basal segment of palp large, flattened, rectangular, mid-segment short, cylindrical, terminal segment longer, cylindrical, not acutely tapered, with an oval pit-shaped sense organ on dorsal surface. Head of second-instar larva similar, but uniformly pale yellow, with well defined epicranial suture on dorsal surface.

Prothorax long, 3.3 times the head length; anterior region uniformly pale yellowish brown with two fuscous marks on lateral surfaces of dilated area; mid-region of prothorax with light yellowish brown tergite overlain by two dark brown marks which dilate posteriorly on either side of pale dorsal midline, sternite with two brown marks extending along margins from coxal bases; posterior region pale yellowish brown with two brown marks on either side of dorsal midline and brown patches over spiracles. Mesothorax rectangular, divided by deep transverse fold near posterior margin, pale yellowish brown with two brown marks on either side of dorsal midline and on lateral surfaces. Metathorax shorter, wider than mesothorax, similarly coloured but with a

TABLE 1. Mean measurements (mm) for *Moranida peruviansis* larvae. Size ranges are shown below means.

	2nd Instar	3rd Instar
Number of larvae measured	8	23
Head width . . . . .	0.49 0.48–0.52	0.81 0.76–0.88
Head length . . . . .	0.52 0.52	0.90 0.84–1.00
Mandible length . . . . .	0.69 0.64–0.72	1.14 1.08–1.20
Prothoracic length . . . . .	1.46 1.40–1.48	2.98 2.72–3.16
Body width* . . . . .	1.18 0.88–1.28	2.08 1.52–2.60
Body length* . . . . .	4.54 4.00–4.88	8.22 7.36–9.36

\*Variable, depending upon feeding and state of maturity within the instar.

prominent wide V-shaped mark on mid-dorsal region, and two brown marks on each pleurite; metathoracic spiracle difficult to discern. Legs with coxae pale yellowish brown with brown marks on dorsal surfaces; femora brown proximally, pale medially with distinct brown band distally before pale apices; tibiae uniformly pale brown, bearing rows of short rigid setae; tarsi uniformly brown, terminating in paired pale brown claws.

Abdomen pale yellowish brown with three rows of brown marks on either side of dorsal midline; segment 7 with prominent brown marks on lateral surfaces; segment 8 pale yellowish, bearing fusiform dolichasters.

**LARVAL BIOLOGY.** The larvae were found in small caves and under rock overhangs, some on the beachfront, just above the high water mark. This is the first time that crocine larvae have been encountered so close to the sea, although the area is extremely arid. They live on the surface of dampish dust and sand accumulated in the caves, V. C. Moran (personal communication). The larvae are very agile, being capable of rapid backward and forward movement as well as having the ability to climb rough vertical surfaces such as cave walls. They feed on slow moving, soft bodied invertebrates, and in the laboratory they were reared on the worker caste of *Trinervitermes trinervoides* Sjöstedt (Isoptera).

**RESTING POSITION OF ADULTS.** The adults rest with the wings held out at right angles from the body and flat against the substrate. This enables them to blend with the background against which they are resting, especially if it is light in colour.

**MATERIAL EXAMINED.** Holotype ♂, 12 ♂, 5 ♀ paratypes, 31 larvae. PERU: 3 km N. La Cruz (03.40 S 80.40 W), 2.vii.1978, holotype ♂, 9 ♂, 3 ♀ paratypes, 23 larvae; Zorritos (03.40S 80.42W), 2.vii.1978, 3 ♂, 2 ♀ paratypes, 8 larvae. All adults reared from larvae collected by V. C. Moran and H. G. Zimmermann, larval collection dates given. Holotype ♂, 10 ♂, 3 ♀ paratypes in National Collection of Insects, Pretoria, South Africa; 1 ♂, 1 ♀ paratypes in Departamento Entomologia, Universidad Nacional Agraria, La Molina, Lima, Peru; 1 ♂, 1 ♀ paratypes in British Museum (Nat. Hist.), London, England.

***Amerocroce* gen. nov.**

Type-species: *Amerocroce boliviana* spec. nov.

Similar to *Moranida* but differing in several important respects, outlined below. Adults with very long narrow rostrum and shortish antennae. Mouthparts similar to those of *Moranida*. Forewings not emarginated; Rs arising as in *Moranida*, with first two branches curving upwards but not incrassate; venation otherwise like that of *Moranida*. Bullae absent. Legs resembling those of *Moranida*. Abdomen very short; males with tergite 9 divided, ectoprocts as in *Moranida* but ectoprocts shorter; distal lobes of parameres fused. Pleuritocavae, gonosetae, spinellae absent. Female with tergite 9 and ectoprocts like *Moranida*; sternites 7 and 8 separate, not divided ventrally; a separate distinct sclerite occurs above each lateral gonapophysis; lateral gonapophyses bearing modified bent setae.

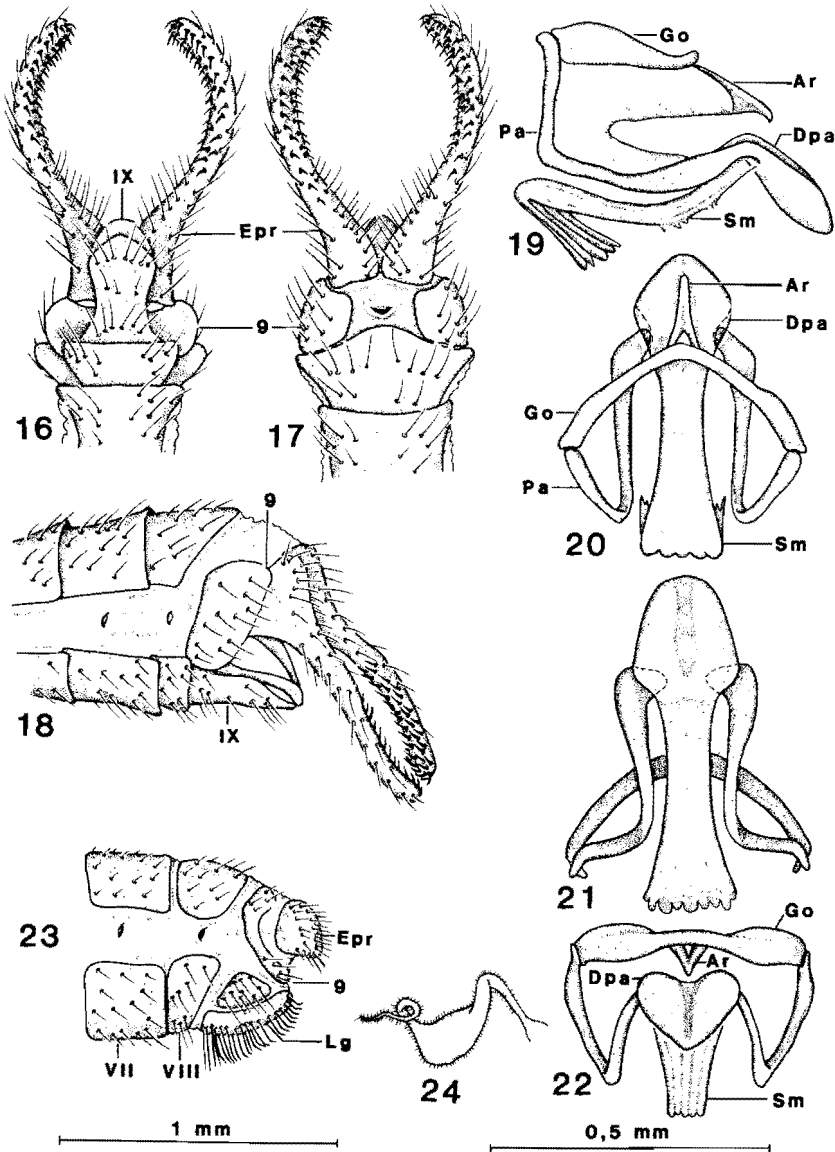
Larva resembling *Moranida* but with anterior region of prothorax much longer. Other morphological characters as described for *Moranida*.

*Amerocroce* cannot be accommodated in either of the two South American genera. The males of *Amerocroce* have long ectoprocts and the distal lobes of the parameres are fused; *V. bruchi* males have short ectoprocts and free parameral lobes (the male of *V. fritzi* is unknown). In the females, sternites 7 and 8 are separate, and there is an extra sclerite above the lateral gonapophyses in *Amerocroce*; in *Veurise* both species have sternites 7 and 8 fused and these is no extra sclerite (Stange & Williner 1981). The larva of *Amerocroce* has a long prothorax whereas *V. bruchi* has a short prothorax (the larva of *V. fritzi* is unknown). *Amerocroce* differs from *Pastranaia* by having 1A and Cu2 fused and by the fusion of the distal lobes of the parameres; in *Pastranaia* 1A and the distal paramere lobes are free (Orfila 1954). It differs from *Moranida* in the features outlined above, the most important of these being the fusion of the distal paramere lobes in *Amerocroce* and the form of the female terminalia. *Amerocroce* resembles *Josandrevia* and *Croce* MacLachlan, in the fusion of the distal paramere lobes and lack of bullae (see Hölzel 1975). It differs from both these genera in the origin and shape of Rs, from *Josandrevia* by the fusion of 1A and Cu2 and lack of pleuritocavae. It can also be separated from *Croce* on the basis of larval morphology; the two known *Croce* larvae, *C. filipennis* (Westwood) and *C. aristata* (Klug), both have short prothoraxes (Ghosh 1910; Hafez & El Moursy 1964). *Amerocroce* can be distinguished from other crocine genera by features such as lack of bullae, form of the male genitalia, wing venation and larval morphology.

***Amerocroce boliviana* spec. nov., figs 2, 4, 15, 16–24**

**ADULTS.** Sexes alike, characterized by the very long rostrum, structure of Rs, short abdomen with long clasper-like ectoprocts and fusion of the distal paramere lobes in the male. The female has an extra sclerite between tergite 9 and lateral gonapo-





Figs 16-24. *Amerocroce boliviana* spec. nov. 16. Apex of abdomen male, ventral. 17. Ditto, dorsal. 18. Ditto, lateral. 19. Gonarcus and parameres, lateral. 20. Ditto, dorsal. 21. Ditto, ventral. 22. Ditto, caudal. 23. Apex of abdomen, female. 24. Spermatheca.

Abbreviations: Sm – sclerotized membrane, others as in figs 5-13.

physes. Size, mean measurements in mm for 17 specimens, ranges in brackets: length of body (excluding head) 5,6 (5,0–6,0); length of forewing 11,2 (10,0–12,0); length of hindwing 31,9 (27,0–36,0); length of antenna 3,00 (2,80–3,20); length of rostrum (from ventral margins of toruli) 1,84 (1,68–2,00); holotype male 5,6; 12,0; 34,0; 3,00; 1,82 respectively.

Head (fig. 4) yellowish white, faintly marked with reddish brown on vertex and clypeus; genae and labrum pale. Mouthparts uniformly pale; galea shaped as in *M. peruvienis*; stipes and lacinia with long rigid setae on inner surfaces; mandibles with slight apical notch. Rostrum about 3,5 times as long as interorbital distance across vertex. Antennae slender, thickened apically; scape and pedicel uniformly pale, occasionally with reddish suffusion, flagellum pale yellowish brown, darkening apically, densely clothed with short brown setae. Pronotum (fig. 4) longer than wide, brownish yellow, occasionally with diffuse reddish markings; short black setae occur on anterior and posterior margins and sparsely on dorsum, with pale long setae laterally. Cervical sclerite pale, devoid of setae; sternites uniformly pale. Pterothorax uniformly pale yellowish with thin black stripe across mesoscutum above wing bases; metascutellum diffusely marked with brown; pleurites, sternites uniformly yellowish white, occasionally with faint black stripes across supraepimera. Legs pale yellowish white with slight infuscations at proximal ends of tibiae, covered with short brown setae; proximal tarsomere almost twice as long as combined length of distal four, paired tarsal claws pale brown. Forewings (fig. 2) hyaline, with longitudinal veins hyaline, interrupted with brown at junctions with crossveins, crossveins brown; wing veins bearing short curved brown setae and posterior marginal fringe; pterostigma comprising incassate costal veins, dark brown proximally, white to yellowish white distally; two crossveins (occasionally one) present between R and M before Rs; seven or eight (occasionally five to nine) radial crossveins between R and Rs; three or four (sometimes two to five) crossveins between Rs and first branch of Rs; the first two branches of Rs curve upwards but do not coalesce with R; first branch of anterior cubital vein (Cu1) arises far beyond origin of Rs. Hindwings covered with short pale yellowish brown setae.

Abdomen short, brownish yellow, diffusely marked with brown; setae sparse except on segments 5 to 9. Male (figs 16–22) with a pair of shallow pocket-like invaginations, not developed into pleuritocavae, opening dorsally between tergites 6 and 7. Each half of tergite 9 subrectangular, scarcely overlapping sternite 9 which is broad proximally, slightly constricted medially before the broadly rounded apex; ectoprocts curved, yellowish, elongated into claspers with sparsely arranged long curved setae proximally and on outer surfaces, with numerous short curved spines on inner surfaces. Gonarcus arcuate with narrow dorsal and ventral flanges; arcessus long, curved, not reaching apex of parameres; parameres forming a right angle in lateral view, with distal lobes broadening, fused into a single fleshy heart-shaped lobe: a strongly sclerotized membrane with muscular attachments, extends anteriorly from posterior margin of fused paramere lobes, folds back under itself before attaching to ventral body wall. Female (figs 23, 24) with small ectoprocts bearing short rigid brown setae, especially robust on venteroposterior margins; sternites 7 and 8 separate from one another, not divided ventrally, separate from lateral gonapophyses; lateral gonapophyses narrow with obtuse apices, bearing long slender setae proximally, setae become progressively stouter, more bent, shorter towards apices of lateral gonapophyses; a subtriangular sclerite, covered with long slender setae, occurs above each lateral gonapophysis. Spermatheca broad with acute coiled tip and covered with minute seta-like outgrowths.

LARVA (fig. 15). Characterized by very long mottled prothorax, banded legs and prominent V-shaped mark on the metatergites.

TABLE 2. Mean measurements (mm) for *Amerocroce boliviana* larvae. Size ranges are shown below the means.

	2nd Instar	3rd Instar
Number of larvae measured	22	11
Head width.....	0,55 0,52-0,56	0,81 0,80-0,84
Head length .....	0,53 0,48-0,56	0,81 0,76-0,88
Mandible length .....	0,69 0,68-0,72	1,05 0,96-1,12
Prothoracic length .....	1,68 1,60-1,84	3,15 2,96-3,32
Body width* .....	1,23 0,68-1,44	2,13 1,64-2,48
Body length* .....	4,84 4,00-5,36	8,40 7,54-9,44

\*Variable, depending upon feeding and state of maturity within the instar.

Head as wide as long, or slightly wider than long; occipital region rounded; posterior and lateral surfaces of head mottled brown, with pale V-shaped area extending posteriorly from toruli and eyes, converging along dorsal midline; clypeal region diffusely brown with two longitudinal stripes medially; tiny papillae occur on surface of head. Eyes black. Antennae each comprising a stout, brown pedicel supporting a delicate eight-segmented flagellum, light brown, darkening towards apex; proximal and distal flagellomeres long, intermediate six short. Mandibles longer than head, pale yellowish brown, darkening towards curved apices, devoid of teeth but with tiny fusiform dolichasters proximally; basal segment of labial palp large, flattened, mid-segment short, cylindrical, terminal segment fusiform with an oval pit-shaped sense organ on dorsal surface. Head of second-instar larva similar, but with well defined dorsal epicranial suture.

Prothorax very long, about 3,8 times the head length; anterior region pale creamy yellow overlain with brown mottling and two brown marks on lateral surfaces of dilated area; mid-region of prothorax with tergite creamy yellow overlain with diffuse brown markings and two prominent brown stripes laterally above coxal bases, sternite pale with two brown marks extending anteriorly from coxal bases; posterior region pale creamy yellow with two pairs of prominent brown marks on either side of

dorsal midline and lateral brown patches over spiracles; prothoracic segments all with sparsely arranged fusiform dolichasters. Mesothorax rectangular, pale creamy yellow, with shallow transverse fold near posterior margin, two brown marks occur on either side of dorsal midline anterior to transverse fold. Metathorax slightly shorter, wider than mesothorax, but constricted posteriorly; prominent V-shaped mark overlies the metatergites on midline, with smaller lateral marks; metathoracic spiracles dorsally situated, difficult to discern. Legs with pale coxae with brown spots; femora pale but overlain by two broad brown bands; tibiae pale with dark brown marks at articulation with femora; tarsi pale brown but darker apically, terminating in paired brown claws.

Abdomen pale creamy yellow with brown marks on either side of dorsal midline and laterally, marks on segments 4 and 5 prominent; segment 7 brown with prominent brown marks on lateral surfaces; segment 8 with dark brown marks on dorsal midline, covered with pale fusiform dolichasters.

*Amerocroce boliviana* is similar to *V. fritzi*, and I originally suspected that it could be the same species. However, several differences have been observed between the unique female specimen of *V. fritzi*, described and illustrated by Stange & Williner (1981), and the series of specimens described above. The most important of these is the form of the female terminalia, the male and larva of *V. fritzi* being unknown. In *A. boliviana* sternites 7 and 8 are separate and there is an extra sclerite above the lateral gonapophyses. Stange & Williner (1981) show sternites 7 and 8 fused, and do not record an extra sclerite above the lateral gonapophyses in *V. fritzi*. In *A. boliviana*, and other Crocinae, the maxillary and labial palps are four and three-segmented respectively and the mandibles are short, the articulation points lying under the clypeo-labral suture; Stange & Williner (1981) depict the maxillary and labial palps of *V. fritzi* as being five-segmented and unsegmented respectively, and show the mandibles as being very long, articulating near the base of the clypeus. There are also other minor differences such as the position of the maxillary palps.

An attempt to borrow the holotype of *V. fritzi* for comparison was unsuccessful. A specimen was then sent to Dr Stange who kindly examined it, and stated that 'it looks like *Veurise fritzi* to me although a few details are not exactly right', L. A. Stange (*in litt.* 1982). In view of the uncertainty surrounding the identity of these specimens, I decided to describe a new species based on males, females and larvae, rather than make an incorrect association with the female of *V. fritzi*.

**LARVAL BIOLOGY.** Similar to *M. peruviansis*, except that these larvae were collected from small caves in a river valley far from the coast, V. C. Moran (personal communication).

**RESTING POSITION OF ADULTS.** The wings are held at an angle of about 45 degrees from the body, and are held against the substrate with the posterior margins touching the surface and the anterior margins slightly raised above it.

**MATERIAL EXAMINED.** Holotype ♂, 12 ♂, 4 ♀ paratypes, 33 larvae. BOLIVIA: 80km S Aiquile on road to Sucre (18.40 S 65.12 W), 4 ♂, 1 ♀ paratypes, 8 larvae, 23.vi.1978; 30 km S Cochabamba on road to Parotani (17.20 S 66.20 W), 5 ♂, 2 ♀ paratypes, 15 larvae, 26.vi.1978; 1 km S Parotani (17.30 S 66.20 W), holotype ♂, 3 ♂, 1 ♀ paratypes, 10 larvae, 26.vi.1978. All adults reared from larvae collected by V. C. Moran and H. G. Zimmermann, larval collection dates given. Holotype ♂, 10 ♂, 3 ♀ paratypes in National Collection of Insects, Pretoria, South Africa; 1 ♂, 1 ♀ paratypes

in Instituto Miguel Lillo, Tucuman, Argentina; 1 ♂ paratype in British Museum (Nat. Hist.), London, England.

*Veurise bruchi* Navás, fig. 25

ADULTS. Described by Navás (1927), Hölzel (1975) and Stange & Williner (1981).

LARVA. Characterized by the short prothorax, quadrate head and prominent triangular mark on metatergites.

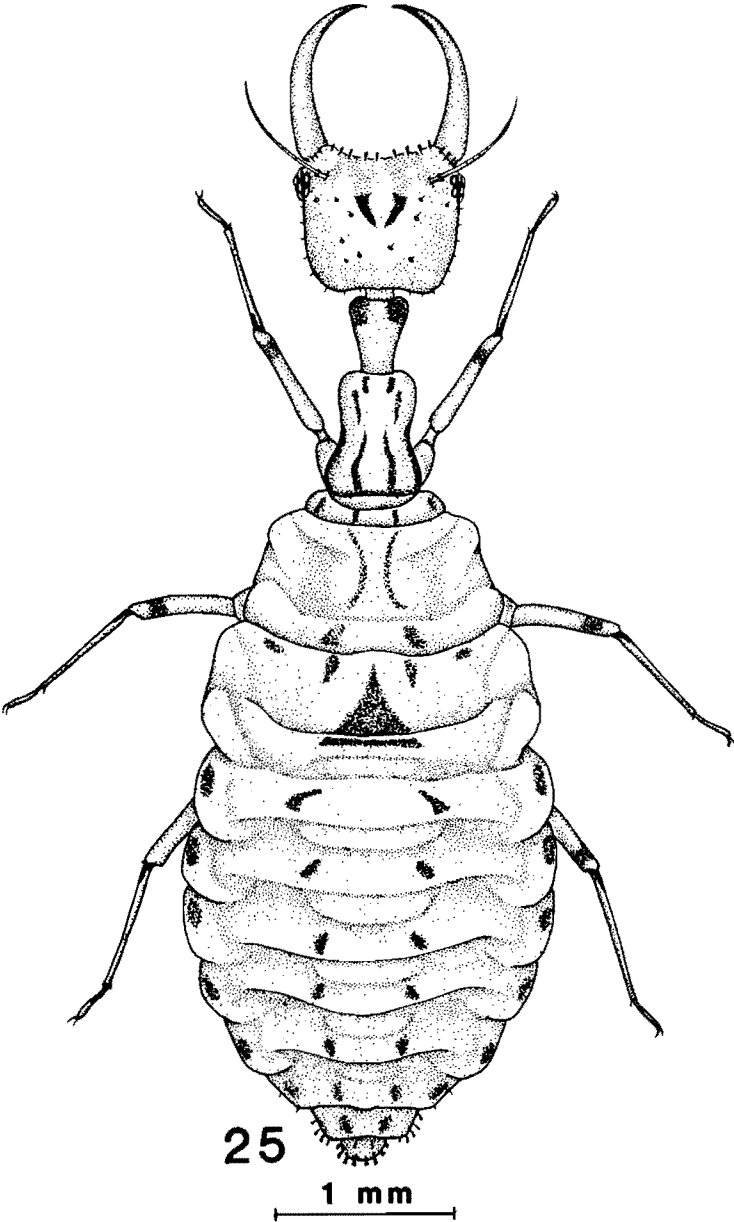
TABLE 3. Mean measurements (mm) for *Veurise bruchi* larvae.

Number of larvae measured	2nd Instar	3rd Instar
	1	1
Head width.....	0,56	0,92
Head length .....	0,56	0,84
Mandible length .....	0,68	1,00
Prothoracic length .....	0,76	1,20
Body width .....	1,40	2,12
Body length .....	4,28	6,40

Mansell, M. W. (1982). New *Crocinae* (Neuroptera: Nemopteridae) from South America, with descriptions of larvae.

Head quadrate, wider than long, occipital region square; two prominent fuscous marks occur posterior to tentorial pits, expanding anteriorly to cover clypeal region, lateral and occipital regions of head dark brown except for area posterior to eyes, mid-dorsal region yellowish brown; anterior margin of clypeus bearing dolichasters with stellate openings; dorsal surface of head with tiny dolichaster-bearing papillae. Eyes black, each comprising seven stemmata, six dorsolaterally, one ventrally situated. Antennae consisting of a stout black pedicel bearing a seven or eight-segmented flagellum, proximal and distal flagellomeres long, intermediates short. Mandibles longer than head, uniformly pale brown, devoid of teeth, curved near apices with small dolichasters along basal third; maxillae and labium similar to those of *M. peruviansis* described above. Head of second-instar larva similar but with well defined epicranial suture on dorsal surface.

Prothorax short, about 1,4 times the head length, comprising three distinct regions; anterior region short, dilated apically, pale, with two brown marks on lateral surfaces of dilated area; mid-region longer, wider, divided into tergite and sternite, bearing prothoracic legs, tergite yellowish with lateral and posterior regions brown, two



25  
1 mm

Fig. 25. Larva of *Veurise bruchi* Navás.

brown marks extend anteriorly on either side of dorsal midline, terminating in two distinct spots at anterior margin, coxal bases brown, paler apically; anterior and mid-regions of prothorax strongly sclerotized; posterior region short, unsclerotized, divided by deep transverse fold, incorporated with the rest of the body, bearing prothoracic spiracles, pale, with two prominent brown marks on either side of dorsal midline. Mesothorax rectangular, pale reddish buff, with transverse fold near posterior margin; two anteriorly converging stripes occur on either side of dorsal midline, lateral margins with reddish brown marks. Metathorax shorter, wider than mesothorax, divided by transverse fold, with prominent brown triangular mark across dorsal midline, other diffuse brown marks also present on this segment; metathoracic spiracles difficult to discern. Legs shortish, stout, pale brown with dark annulations on femora, extremities of femora pale yellowish; proximal ends of tibiae dark brown, rest pale brown; tarsi unsegmented, terminating in paired brown claws.

Abdomen ten-segmented, light buff with pale broad midline flanked by two spots on each segment, a large brown mark occurs on lateral surfaces of each segment with diffuse brown marks also present. Segments 1 to 6 all alike, becoming progressively smaller, with minute lateral spiracles; segment 7 short, broad, with dolichasters and spiracles laterally; segment 8 broad, rounded, covered with pale fusiform dolichasters; segments 9 and 10 reduced, telescoped into segment 8, together forming the spinneret; abdominal sternites pale.

**LARVAL BIOLOGY.** The larvae were collected from small caves where they live amongst accumulated plant debris and feed on small, soft-bodied invertebrates, V. C. Moran (personal communication). The larvae are rather slow moving by comparison to the two previous species, but are agile climbers.

**MATERIAL EXAMINED.** 1 ♀, 2 larvae. ARGENTINA: Salta Province, 9 km S Cafayette (26.08 S 66.00 W), 2 larvae, 15.vi.1978, V. C. Moran. Adult reared from larva.

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